Piezoelectric Transducer Apparatus Having Independent Gain and Phase Characteristics Functions

Abstract

A piezoelectric transducer apparatus comprises at least one piezoelectric unit and a body structure. Each of the at least one piezoelectric unit has a piezoelectric block and at least one pair of electrodes. Each electrode is adhered to one surface of the piezoelectric block. Each of the at least one piezoelectric unit is adhered to the surface of the body structure with the electrode exposed externally. The electrode shape of the electrode of each of the at least one piezoelectric unit is matched to a desired body strain pattern existing in the body structure wherein the electrode of each of the at least one piezoelectric unit may excite a strain pattern in the body structure that is the same as the desired body strain pattern. The body structure of any structural configuration may have a resolved electrode shape that results in the disengagement of the phase and gain characteristics of the piezoelectric construction based on that particular body structure.